3. In this question, the function INT(X) is the largest integer less than or equal to X.

For example,

$$\text{INT}(5.7) = 5$$

$$\text{INT}(8) = 8$$

$$\text{INT}(-2.3) = -3$$

Consider the following algorithm.

Step 1 Input N

Step 2 Calculate $A = N \div 10$

Step 3 Let $B = \text{INT}(A)$

Step 4 Calculate $C = B \times 10$

Step 5 Calculate $D = N - C$

Step 6 Output D

Step 7 Replace N by B

Step 8 If $N = 0$ then STOP, otherwise go back to Step 2

(a) Complete the table in the answer book, using $N = 4217$, to show the results obtained at each step of the algorithm.

(4)

(b) Explain how the output values of the algorithm relate to the original input N, where N is any positive integer.

(2)

(Total for Question 3 is 6 marks)